

**Milwaukee Street (DOT # 387 094Y)
Public Grade Crossing Closure Study
City of Plymouth, Sheboygan County, Wisconsin**

**Prepared For:
Wisconsin and Southern Railroad LLC**

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EV A
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Geometrics and Characteristics of the Crossing of Milwaukee Street

Milwaukee Street is located in the City of Plymouth in Sheboygan County. It runs north and south in the area of the crossing. Milwaukee Street carries STH 67. STH 67 diverts one block to the east on Elizabeth Street prior to the crossing, then travels on Caroline Street south to Mill Street, then heads west back again to Milwaukee Street. South of the crossing, Milwaukee Street then also carries CTH C. Milwaukee Street crosses the Wisconsin and Southern Railroad LLC (WSOR) tracks at an angle of about 30 degrees left hand forward (LHF).

There is also a sidewalk extending from E. Main Street in an east-west direction and crosses the tracks immediately adjacent to Milwaukee Street. The sidewalk is in poor condition with very little use.

Of interest for this location is the triangle of city streets formed by Milwaukee Street, Western Avenue, and Elizabeth Street. Western Avenue runs from Milwaukee Street to the northwest, and intersects Elizabeth Street. Elizabeth Street then runs back to Milwaukee Street. Elizabeth Street also is crossed by the tracks. Distances are: 440 feet along Milwaukee Street from Western Avenue to Elizabeth Street; 400 feet along Elizabeth Street from Western Avenue to Milwaukee Street; 520 feet along Western Avenue from Elizabeth Street to Milwaukee Street.

According to WISDOT, the Average Annual Daily Traffic for Milwaukee Street is listed at 3100 vehicles per day. Milwaukee Street is asphalt and 36 feet wide. The roadway in the immediate vicinity of the crossing has a very steep ascending grade from the south of approximately 13 percent. The grade is level from the north. The crossing consists of two tracks. The north track is operational, and the south track is unused and disconnected. The distance from the stop bar to track centerline is 34 feet. Although Milwaukee Street runs north-south, the roadway has a slight westward displacement south of the crossing and its intersection with Main Street, of 10 feet. This has the effect of forcing southbound traffic to face the oncoming northbound traffic lane. This results in confusion as to whether northbound traffic will continue straight on Milwaukee Street, or follow Western Avenue to the left.

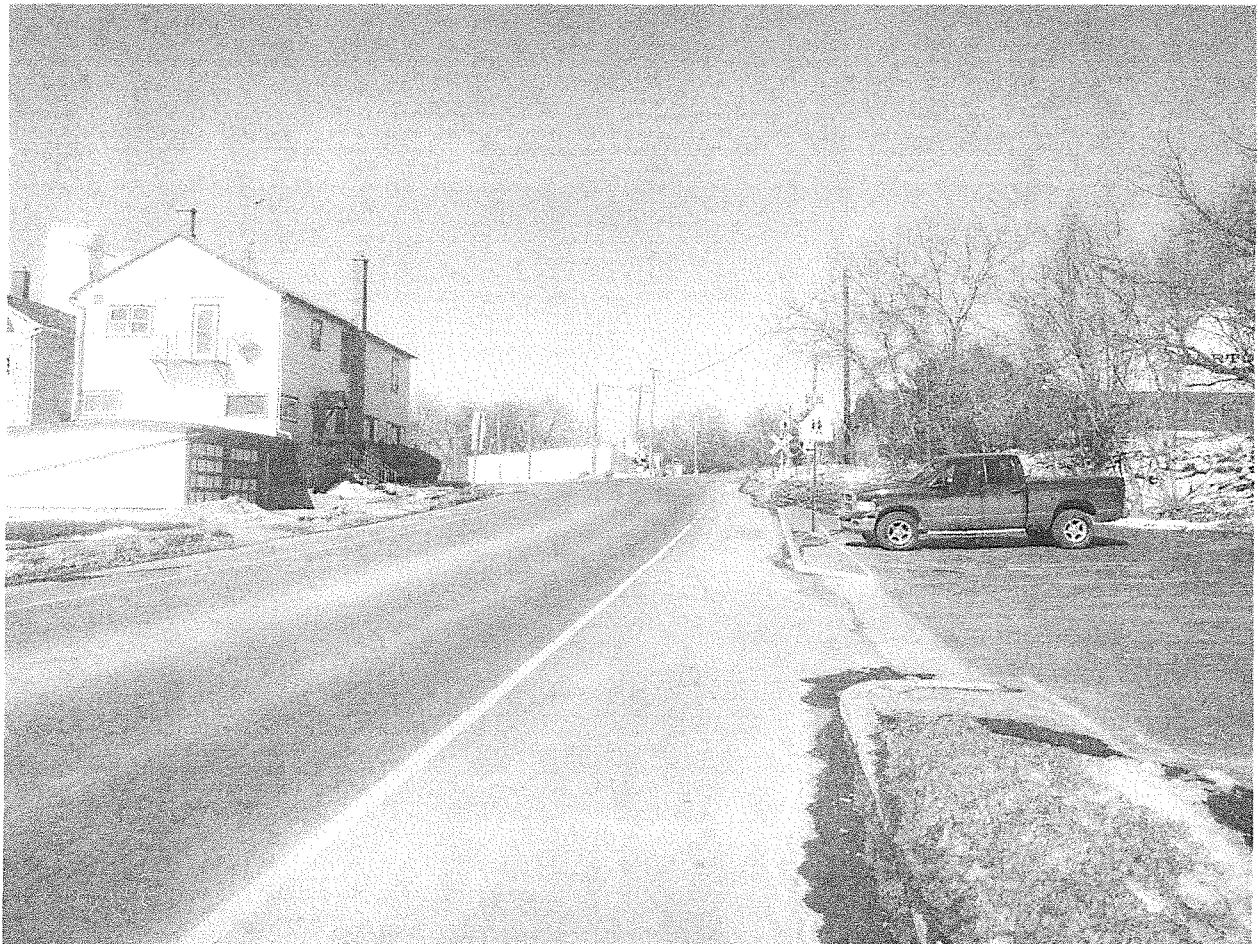


Photo 1 northbound approach



Photo 2, southbound approach

Businesses and residences in the area

There is one residence on the block of Milwaukee Street. It is on the corner of Elizabeth and Milwaukee, with a driveway onto Milwaukee Street. There are two other structures in the pertinent triangle. One is a warehouse of undetermined use, and the other is an unused gas station.

Sartori Food Corporation has a plant that fronts on the east side of Milwaukee Street. Sartori also has a second facility on the other side of the tracks, on Main Street and Western Avenue.

Train operation data

Train speed is currently 10 mph. There are two trains per week to Plymouth. This could change when the Plymouth to Sheboygan Falls Sub is activated this year. There are also approximately 1-2 trains per week north over the crossing between Plymouth and Elkhart Lake, depending upon business demand in Elkhart Lake. These two trains per week to Plymouth will include trains occupying Milwaukee Street for headroom for trains heading east on the Sheboygan Falls to Plymouth Line. Trains may need to pull north across Milwaukee street depending upon the size of train at certain times to access the east west line.

Warning Devices

Warning devices for the Milwaukee Street crossing consist of one 8-inch flashing light signal on the southbound approach, one wig-wag signal for the northbound approach, and one wig-wag for facing the approach of Main Street. There is also an 8-inch flashing light signal on the westbound approach of the sidewalk on Main Street. The adjacent crossing of Elizabeth Street also has warning devices consisting of one 8-inch flashing light signal, and one wig-wag. Wig-wags are archaic warning devices, and with no replacement parts available, are impossible to maintain. There is one stop sign on southbound Milwaukee Street for the intersection of Main and Western Avenue. When a vehicle is stopped at the stop sign, the track is fouled. There is also a single 8-inch flashing light signal at the sidewalk for Main Street. The cost to replace the archaic signals at Milwaukee Street is estimated at \$225,000.



Accident History

There has been one accident reported at this crossing. This occurred in 1974, and involved no injuries.

Sight Distances

Milwaukee Street speed limit is an unposted 25 mph. Assuming a speed of 25 mph, the safe stopping distance is 187 feet. The crossing is visible from greater than 187 feet on both approaches. See Photos 1 and 2

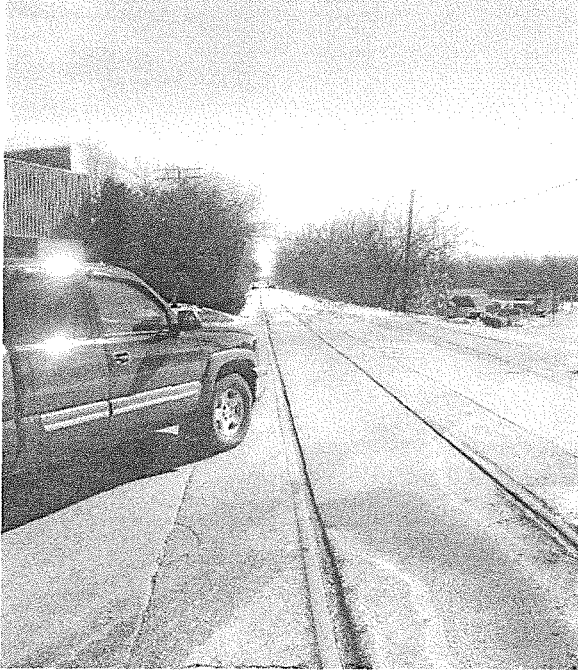


Photo 3

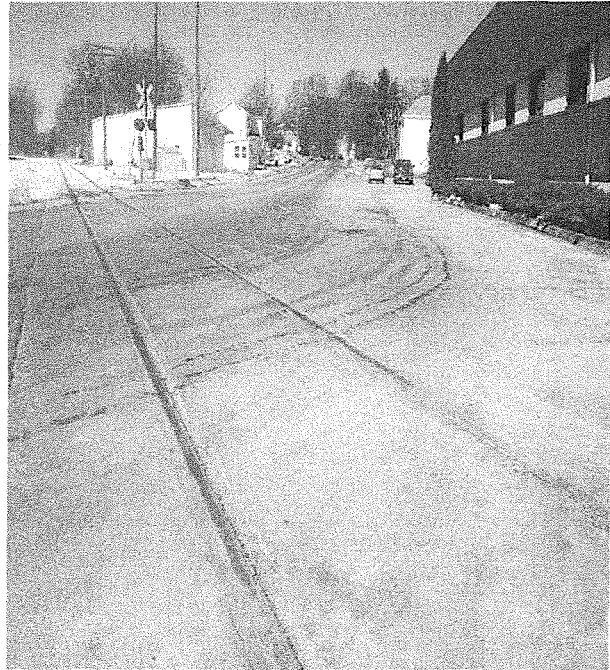


Photo 4

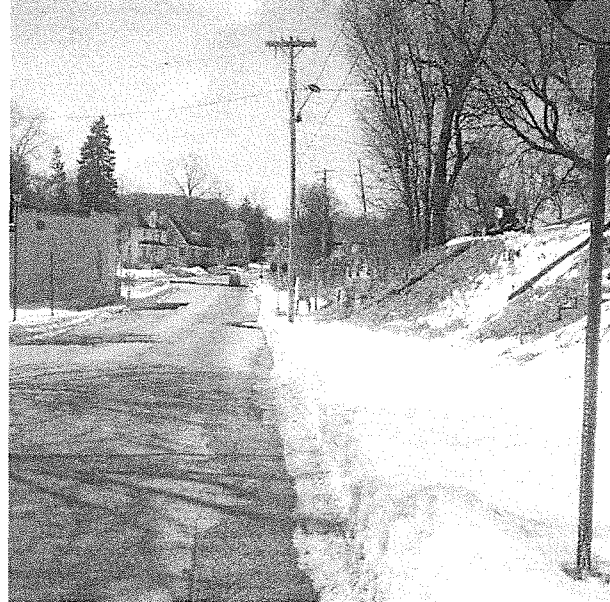
Clearing sight distance is the distance needed to see an approaching train down the track from a stopped point to be able to safely cross the tracks prior to the arrival of a train. Clearing sight distance for the crossing, assuming a train speed of 50 mph, for a WB-50 semitruck is 895 feet. Actual clearing sight distance from a point 12 feet from the nearest rail is in excess of 1,000 feet in all four quadrants. However, clearing sight distance in the northwest is hindered by the LHF skew of the crossing.

View of approaching Trains

Corner sight distance is the distance down the track that a motorist can see when they are at the safe stopping distance. The required corner sight distance is the distance that a motorist must see the approaching train in order to stop safely. The required safe stopping distance for a motorist traveling 25 mph and a train traveling 10 mph is 100 feet. The actual sight distances are: 60 feet in the northeast quadrant, 180 feet in the northwest quadrant, 120 feet in the southwest quadrant, and 50 feet in the southeast quadrant. The view down the tracks of approaching trains is restricted in the northeast and southeast quadrants by buildings and trees.

Turnarounds

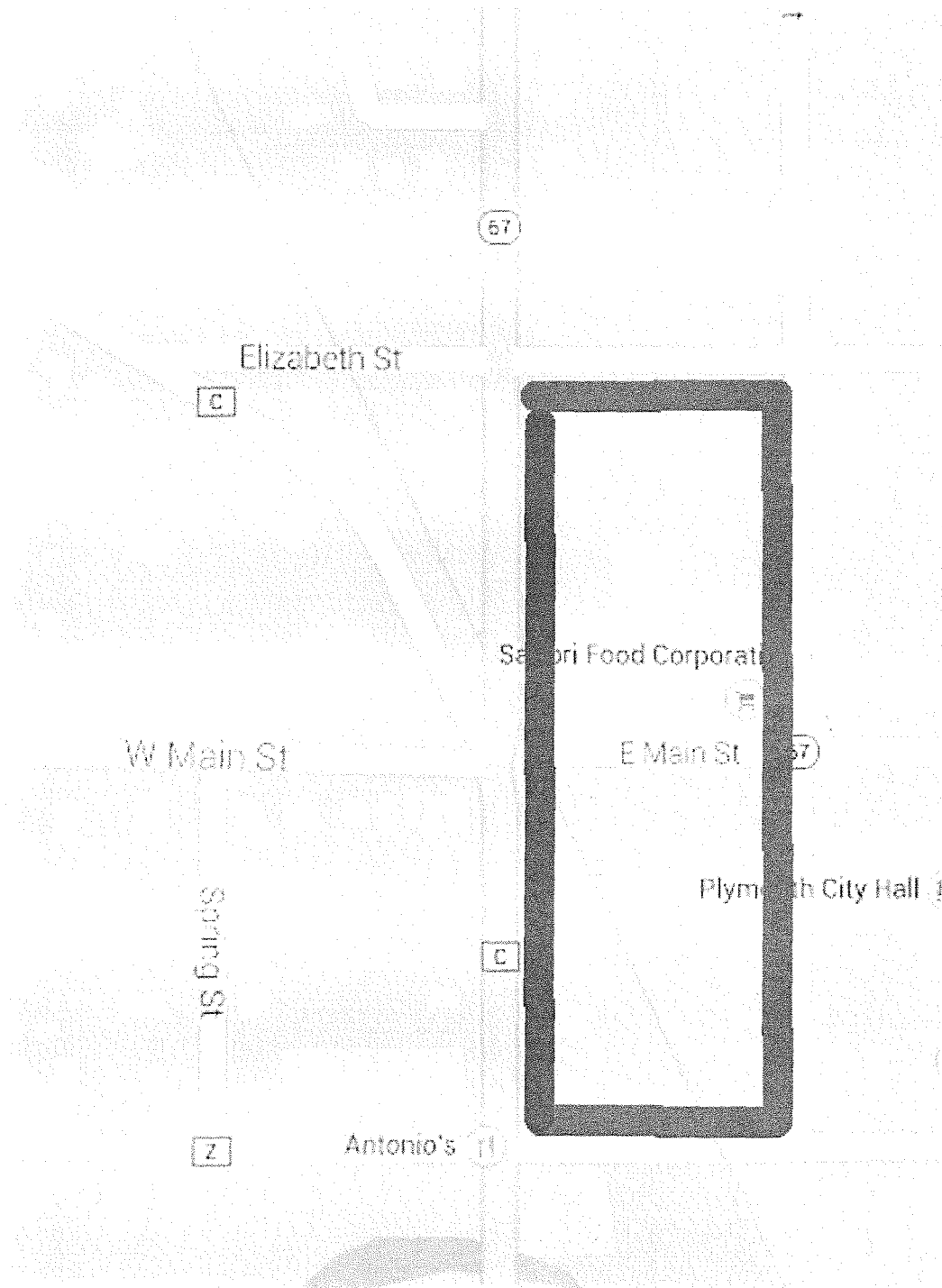
If Milwaukee Street is closed, a turnaround north of the crossing would not be required. The wide area of roadway and frontage for Sartori is adequate for vehicles to turn around. South of the tracks, no turnaround is needed, and the roadway could be obliterated.



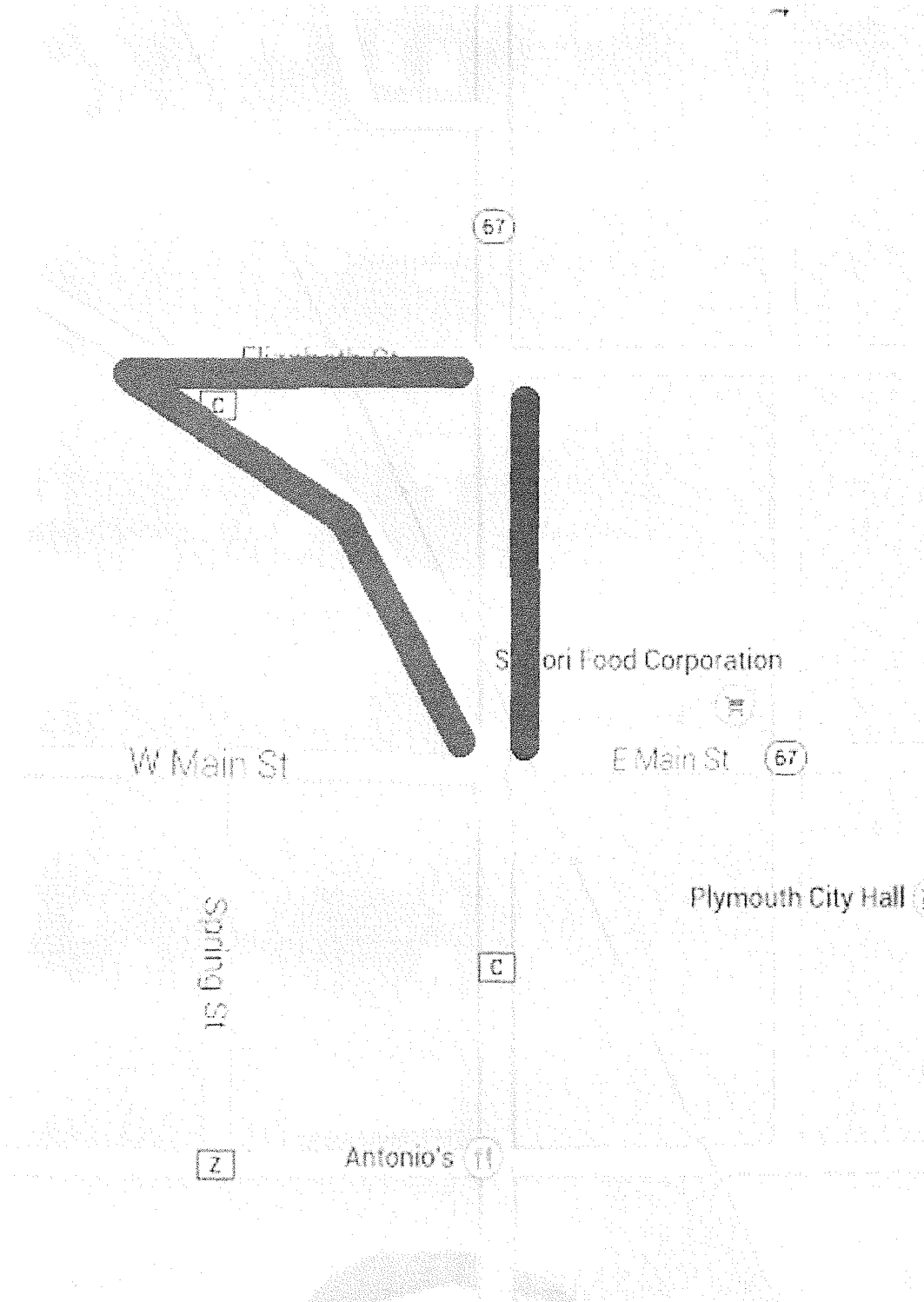
Approaches to Elizabeth Street crossing

Alternate Routes

As previously noted, the marked route for STH 67 runs one block to the east on Caroline Street, bypassing the crossing. The distance from Elizabeth Street to Mill Street is 850 feet. Milwaukee Street to Caroline Street is 350 feet. This is shown to be an adequate alternate route for traffic on Milwaukee Street, adding only two blocks for a total of 1,550 feet. This route is an additional 700 feet. Another alternate route would be to use Western Avenue and Elizabeth Street. The distance from Main Street to Elizabeth Street is 440 feet. The alternate route is 950 feet, for an increase of 510 feet. Turn angle from Western Avenue to Elizabeth Street is 40 degrees, so a curb radius improvement would aid in this turn. Motorists, and particularly emergency vehicles, would have minimal delays by the closure of Milwaukee Street.



Alternate route 1



Alternate route 2

Conclusion:

It is my opinion that the Wisconsin & Southern Railroad LLC crossing with Milwaukee Street in the City of Plymouth should be closed. Milwaukee Street at the intersection with Main Street is

a substandard road considering both the horizontal and vertical alignment. There are adequate alternate safe routes via Caroline Street, and via Elizabeth Street. Vehicles, when stopped at the stop bar, will be within the track zone. There would be minimal negative effect on motorists' drive time, as well as emergency vehicle response time. Milwaukee Street is a redundant crossing, and can safely be eliminated. The cost to replace the signals for a redundant is not justified. The sidewalk extension of Main Street is similarly unnecessary, and should also be closed, and the signal removed.

Brian Yezzer

8/08